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Total degrees and nonsplitting properties of ∑2 0 enumeration degrees

Arslanov M., Cooper S., Kalimullin I., Soskova M.

Kazan Federal University, 420008, Kremlevskaya 18, Kazan, Russia

Abstract

This paper continues the project, initiated in [ACK], of describing general conditions under which relative splittings are derivable in the local structure of the enumeration degrees. The main results below include a proof that any high total e-degree below is splittable over any low e-degree below it, and a construction of a e-degree unsplittable over a Δ 2 e-degree below it. In [ACK] it was shown that using semirecursive sets one can construct minimal pairs of e-degrees by both effective and uniform ways, following which new results concerning the local distribution of total e-degrees and of the degrees of semirecursive sets enabled one to proceed, via the natural embedding of the Turing degrees in the enumeration degrees, to results concerning embeddings of the diamond lattice in the e-degrees. A particularly striking application of these techniques was a relatively simple derivation of a strong generalisation of the Ahmad Diamond Theorem. © 2008 Springer-Verlag Berlin Heidelberg.

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